MSMR

Medical Surveillance Monthly Report

Vol. 9 No. 4

May/June 2003

USACHPPM

Contents

Current and past issues of the MSMR may be viewed online at: *http://amsa.army.mil*

Report Documentation Page

Form Approved
OMB No. 0704-0188

1. REPORT DATE	2. REPORT TYPE	3. DATES COVERED
JUN 2003		**00-05-2003 to 00-06-2003**

4. TITLE AND SUBTITLE	5a. CONTRACT NUMBER
Medical Surveillance Monthly Report (MSMR). Volume 9, Number 4, May/June 2003	5b. GRANT NUMBER
	5c. PROGRAM ELEMENT NUMBER
6. AUTHOR(S)	5d. PROJECT NUMBER
	5e. TASK NUMBER
	5f. WORK UNIT NUMBER
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) **U.S. Army Center for Health Promotion and Preventive Medicine,Armed Forces Health Surveillance Center (AFHSC),2900 Linden Lane, Suite 200,Silver Spring,MD,20910**	8. PERFORMING ORGANIZATION REPORT NUMBER
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)	10. SPONSOR/MONITOR'S ACRONYM(S)
	11. SPONSOR/MONITOR'S REPORT NUMBER(S)

12. DISTRIBUTION/AVAILABILITY STATEMENT
Approved for public release; distribution unlimited

13. SUPPLEMENTARY NOTES

14. ABSTRACT

15. SUBJECT TERMS

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT	b. ABSTRACT	c. THIS PAGE			
unclassified	**unclassified**	**unclassified**	**Same as Report (SAR)**	**20**	

Heat-related Injuries, Active Duty, US Army, 2002

Historically, heat-related injuries have been significant threats to the health and operational effectiveness of soldiers and their units. The U.S. military has developed doctrine, equipment, and training methods that reflect decades of operational lessons learned and numerous research studies. Still, however, physical exertion in hot environments cause numerous (and occasionally fatal) injuries of US soldiers.

Each year, the MSMR summarizes the heat injury experience of active duty soldiers during the prior year. This report summarizes hospitalizations, outpatient visits, and notifiable event reports related to heat injuries among active duty soldiers from January through December 2002.

Methods. The DMSS was searched to identify all medical encounters and notifiable medical event reports that included a diagnosis of "other and unspecified effects of heat and light" (ICD-9-CM: 992.0-992.9). If more than one source documented a heat injury episode, information for summary purposes was derived from the hospitalization record (if one was available) or the reportable event record; ambulatory records were used when they were the only sources of information regarding particular episodes. Finally, to reduce the misclassification of clinical followups as incident cases, medical encounters that occurred within seven days of a prior heat injury diagnosis were excluded from the summary.

Results. During 2002, there were 1,816 heat-related injuries of active duty soldiers. The crude incidence rate was 3.8 per 1000 person-years (p-yrs). In general, heat injury rates declined with increasing age; as a result, crude rates were more than 10-times higher among soldiers younger than 20 compared to those older than 39 (table 1). Among males, rates declined in a nearly linear fashion over the entire age range (figure 1). Among females, rates declined sharply from a relative peak among <20 year olds to a relative trough among 20-24 year olds and then relatively gradually with increasing age thereafter (figure 1). Of note, unadjusted incident rates were at least 2-times higher among enlisted and unmarried soldiers compared to their respective counterparts (table 1).

The rate of heat injuries in 2002 was the highest annual rate of the past five years (figure 2). The relatively high overall rate in 2002 was attributable primarily to increased numbers of ambulatory visits. Of note, the rate of hospitalizations for heat injuries in 2002 was similar to the rates in the prior 4 years (and slightly lower than the rate in 2001) (figure 2).

Table 1. Heat-associated injuries, active duty, US Army, 2002

	Cases	Rate/1,000 person-yrs
Total	1,816	3.8
Sex		
Men	1,439	3.5
Women	377	5.1
Age		
<20	330	8.0
20-24	763	4.8
25-29	406	4.1
30-34	187	2.5
35-39	95	1.5
≥40	35	0.8
Race		
White	1,157	3.8
Black	463	3.7
Other	196	3.5
Marital status		
Single	1,143	5.5
Married	625	2.5
Other	48	2.4
Education		
High school or less	1,523	4.2
At least some college	293	2.4
Grade		
Enlisted	1,664	4.1
Officer	152	2.0
Occupation		
Combat	482	3.7
Healthcare	102	2.3
Other	1,232	4.0

Figure 1. Rate of medical encounters with heat injury-related diagnoses, by age and gender, active duty, US Army, 2002.

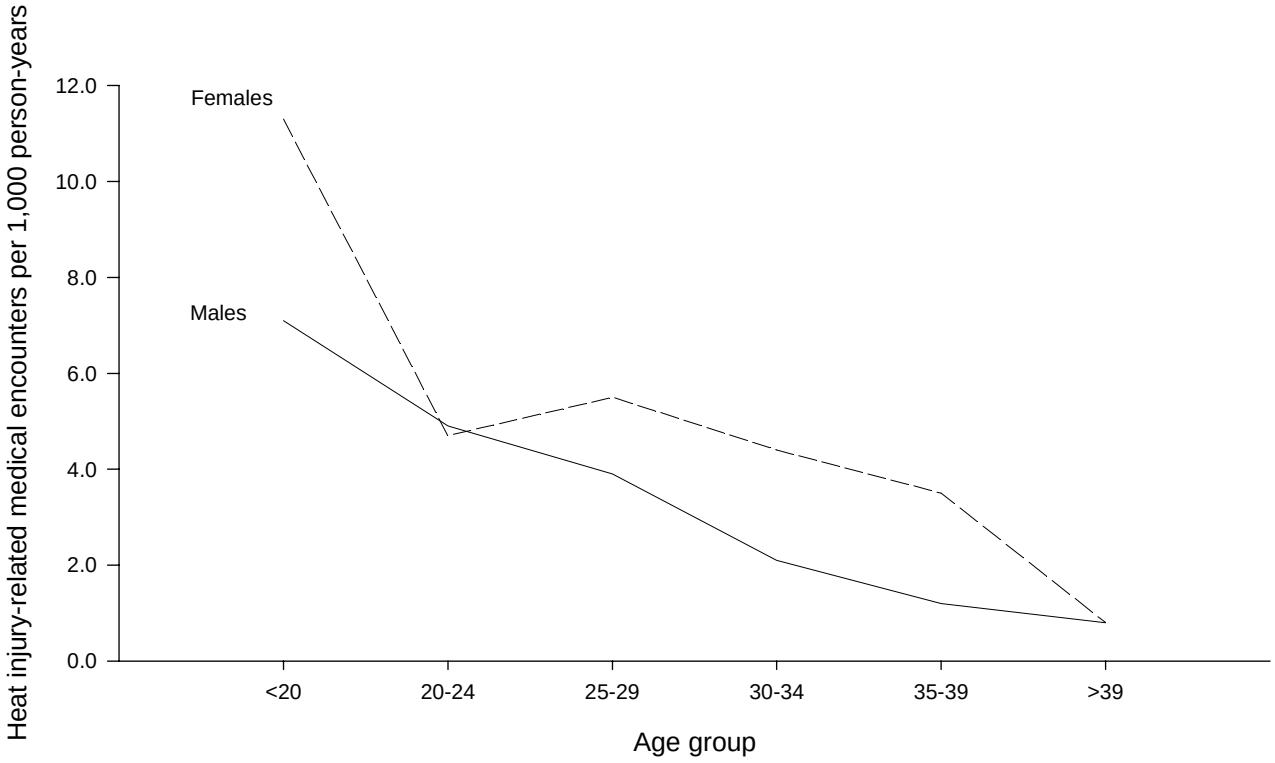
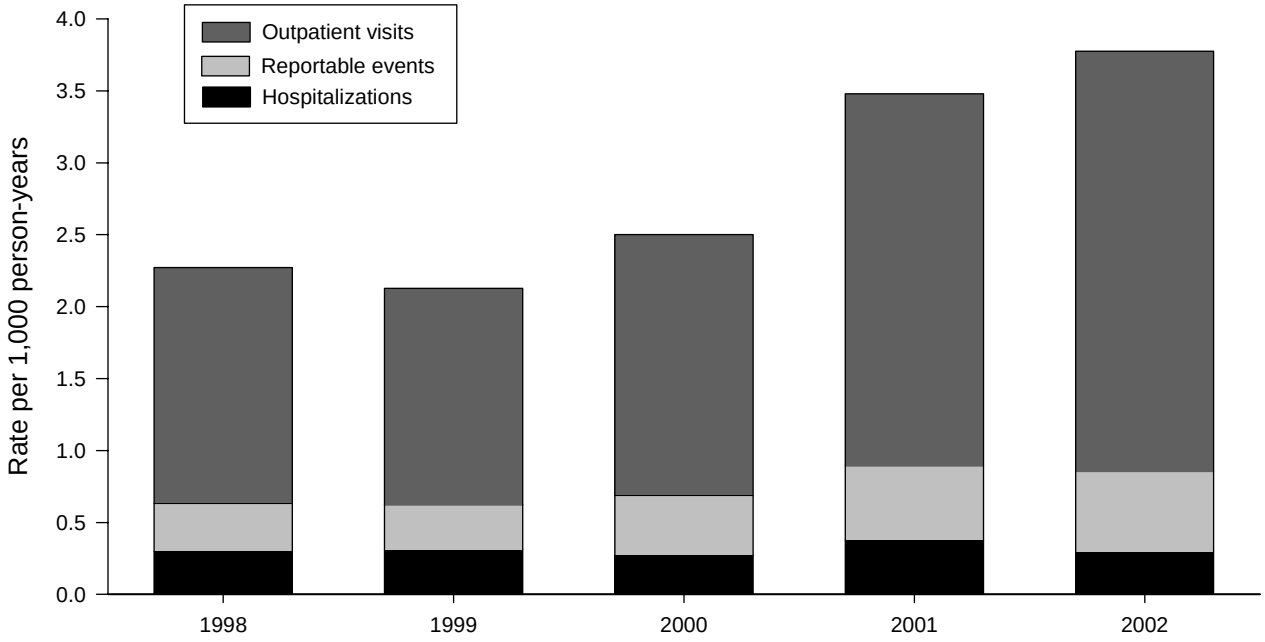


Figure 2. Rate of heat-associated injuries, by source of report and year of diagnosis, active duty, US Army, 1998-2002.



Not surprisingly, approximately 70% of all heat injury-related medical encounters were in June through September – and the highest rate was in July (figure 3). Approximately one-sixth of all heat injury-related diagnoses were reported as "heat stroke." However, in general, the proportions of all diagnoses reported as "heat stroke"were inversely related to the overall heat injury rate—for example, approximately half of all heat injuries in December, but fewer than 10% in July and August, were reported as "heat stroke" (figure 3).

Editorial comment. In 2002, the rate of medical encounters for heat injuries of US soldiers increased for the third consecutive year; however, hospitalizations for heat injuries were lower in 2002 than in 2001. In addition, during the highest risk months of the year, fewer than 10% of all heat injury-related diagnoses were reported as "heat stroke." The results suggest that, particularly during periods of highest risk, heat injury cases are being detected and evacuated from field settings to clinics (for definitive medical evaluation and treatment) earlier in their clinical courses; that there is improving ascertainment and reporting of heat-related (particularly relatively mild) injuries; and/or that numbers and rates of heat-related injuries are continuously increasing.

Whatever the explanation(s) for the increasing rates, it remains clear that heat is a significant threat to the health and operational effectiveness of soldiers. Among all soldiers, heat injury rates were highest in the youngest soldiers, particularly among females. Unit leaders, cadre, and supporting medical personnel, particularly at initial entry training centers, must ensure that soldiers whom they supervise and support are informed regarding risks, preventive countermeasures (e.g., water consumption), early signs and symptoms, and first responder actions related to heat injuries.[1,2]

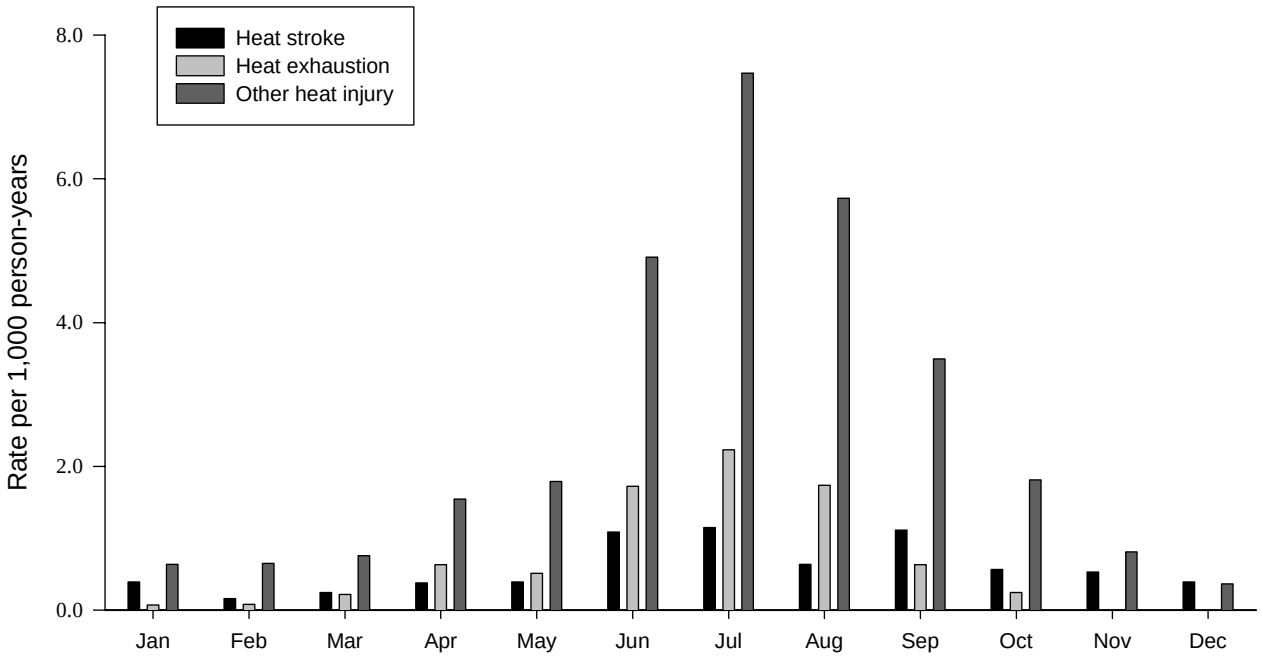
The Army's heat injury prevention program (HIPP) and other information related to heat injury prevention and treatment are accessible at the following website: http://chppm-www.apgea.army.mil/heat/#PM .

Analysis by Abigail L. Garvey Wilson, MPH, Analysis Group, Army Medical Surveillance Activity.

References

1. Memorandum, Headquarters, US Army Medical Command (MCPO-NC), subject: The US Army heat injury prevention program (HIPP), 10 Mar 2003.
2. Memorandum, Headquarters, US Army Medical Command (DASG-HSZ), subject: Policy guidance for fluid replacement during training, 14 Jan 1999.

Figure 3. Distribution of heat-associated injuries, by diagnosis type and month, active duty, US Army, 2002.



Syncope, Active Duty, US Armed Forces, 1998-2002

Syncope is defined as "the temporary loss of consciousness due to a sudden decline in blood flow to the brain. It may be caused by an irregular cardiac rate or rhythm or by changes of blood volume or distribution."[1] Syncope is sometimes a manifestation of serious underlying disease; however, it usually occurs in healthy individuals and has no long term prognostic significance.[1,2] Syncope is relatively common, e.g., after blood donations, venipunctures, and immunizations; while standing for long periods, especially in hot environments; during moments of intense emotions (e.g., weddings, funerals).[1-7] However, there are few population-based studies of its incidence or epidemiology.[7]

Syncope occurs frequently among active duty military personnel; and depending on the circumstances, it can have significant medical and/or military operational consequences. For example, syncope can lead to serious collapse-related injuries,[3,4,6,8] especially to the head; and depending on the timing and circumstances, syncope can disrupt military training and operations. This report summarizes frequencies, rates, and demographic correlates of syncope risk among active duty US servicemembers and explores trainee immunizations as potentially significant risk factors.

Methods. The Defense Medical Surveillance System (DMSS) was searched to identify syncope episodes between 1 January 1998 and 31 December 2002. For surveillance purposes, a case was defined as an outpatient diagnosis of "syncope and collapse" that was coded using the International Classification of Diseases, 9th revision, clinical modification [ICD-9-CM: 780.2]. For analysis purposes, an "immunization episode" was defined as the receipt of one or more immunizations by an individual on one day. Information regarding military experience, immunizations, and demographic characteristics of cases on dates of diagnoses was abstracted from records contained in the DMSS.

Results. During the 5-year surveillance period, there were 44,444 syncope-related clinic visits by active duty military personnel. The crude incidence rate was 6.5 visits per 1,000 person-years. The strongest demographic correlates of increased risk were female gender and young age (table 1, figure 1). Additionally, compared to their counterparts, military personnel diagnosed with syncope were more likely to be enlisted, not married, and have low body mass indexes (BMI), no formal education beyond high school, and healthcare-related occupations (table 1).

Only 3.7% of all syncope-related clinic visits were on the day of or after a reported immunization of any type. In contrast, during the first two weeks of military service (when multiple immunizations are routinely given to new recruits), approximately 43% of syncope-related visits were on the day of or after a reported immunization.

During the first two weeks of military service, there were 11.79 syncope-related clinic visits per 10,000 immunization episodes. However, the rates varied significantly by Service. For example, rates were approximately 3-times higher in the Air Force (16.10 visits/10,000 immunizations), more than twice as high in the Navy (12.55 visits/10,000 immunizations), and approximately 40% higher in the Marines (8.20 visits/10,000 immunizations) than in the Army (5.73 visits/10,000 immunizations) (figure 2).

Editorial comment. Annually, there are nearly 9,000 reports of syncope-related medical encounters by active duty servicemembers. Undoubtedly, actual numbers of syncope episodes are much higher than those reported because most uncomplicated episodes are managed at sites where they occur, at medical aid stations, and/or at troop clinics—and such episodes are not documented in automated medical records. Thus, syncope is a common occurrence among servicemembers.

In regard to demographic characteristics, the strongest correlates of increased risk of syncope were female gender and young age. Low body mass index, which is associated with both young age and female gender, was also correlated with increased risk. These findings are not unique or surprising. For example, a review of syncope cases that received medical attention among children and young adults (1 to 22

Figure 1. Syncope-related clinic visits, by age and gender, active duty, US Armed Forces, 1998-2002.

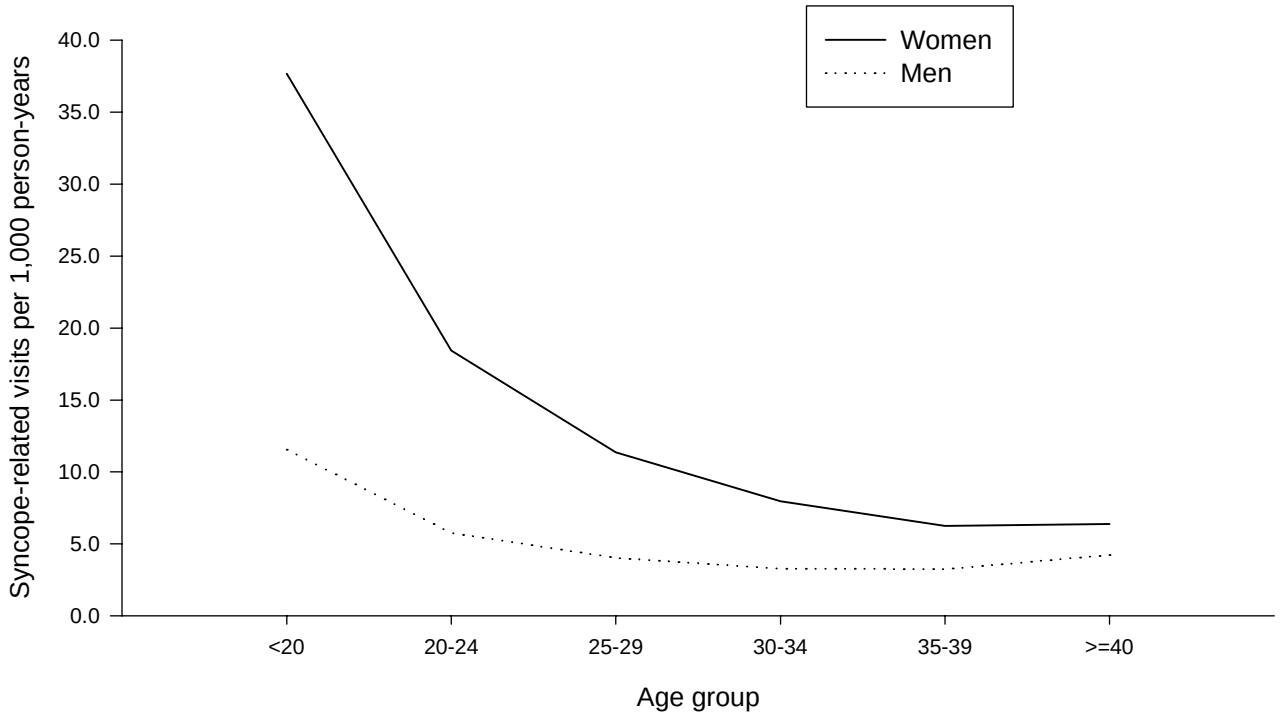
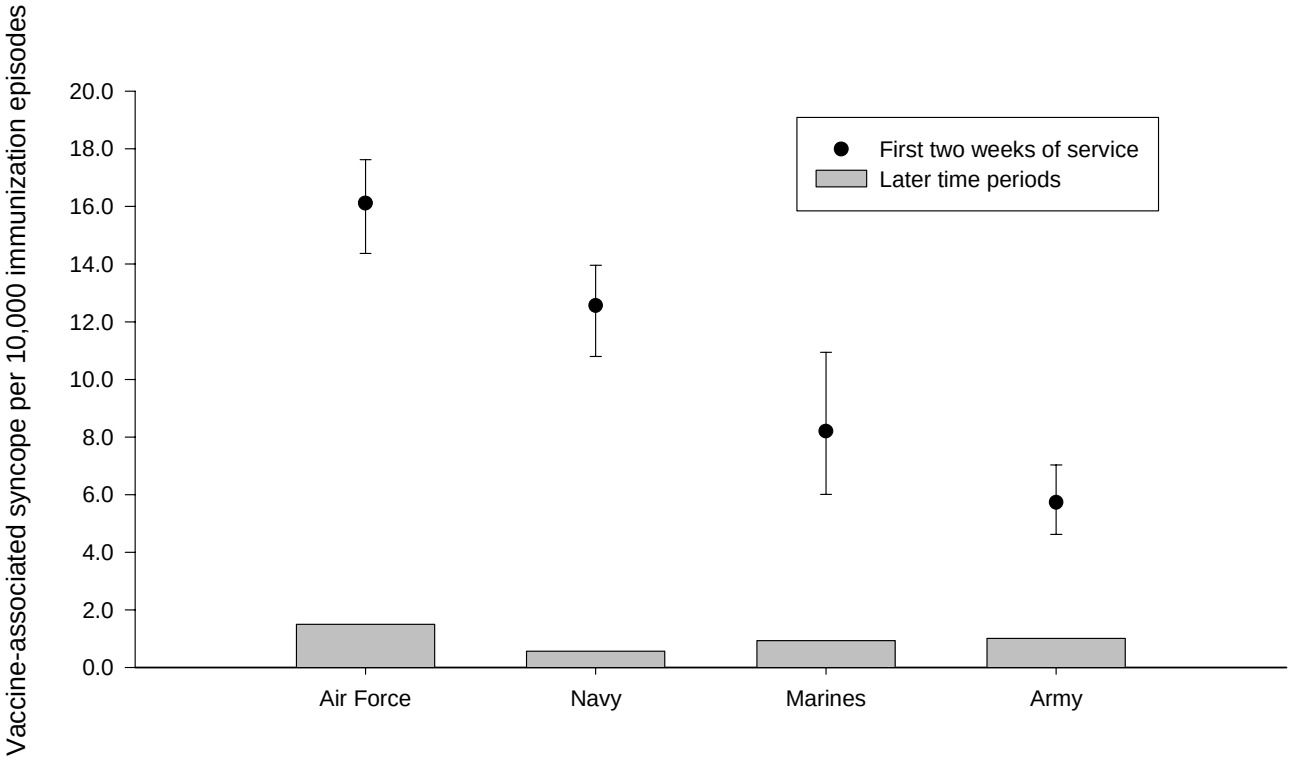


Figure 2. Rate (95% confidence interval) of vaccine-associated syncope per 10,000 immunization episodes, during first two weeks of service compared to later time periods, active duty, US Armed Forces, 1998-2002.



years old) in Rochester, Minnesota, found higher rates among females than males and 15-19 year olds than younger or older.[7] A study of high school aged blood donors reported higher rates of syncope among females and donors with low body weights; of note, after controlling for body weight, male and female donors had similar rates of syncope.[5]

In the military, it is likely that gender and age-related differences in syncope risk are related, at least in part, to gender and age-related differences in body forms (e.g., height, weight). Similarly, grade, educational attainment, and marital status are strongly correlated with age; thus, it is unlikely that they are independent risk factors for syncope. Finally, rates of syncope-related medical encounters may be higher in healthcare workers than others because of differences in case ascertainment. For example, many healthcare workers are assigned to medical treatment facilities that report all medical encounters. In such work sites, even uncomplicated episodes of syncope are likely to receive medical attention and be documented in automated medical records.

Syncope is a well-known consequence of blood donation, venipuncture, and vaccination. In this summary, only one of every 30 syncope episodes among servicemembers were on days of or after documented immunizations. However, the actual percent is undoubtedly much higher because immunizations are not yet completely documented in automated records. Of note in this regard, there are wide variations across the Services not only in rates of vaccine-associated syncope but also in the completeness of reporting of immunizations. For example, the Air Force has documented many more immunizations in automated records than any of the other Services (source: Defense Medical Surveillance System, data not shown); and, not surprisingly, the Air Force has the highest apparent rate of vaccine-associated syncope. Thus, differences in rates of vaccine-associated syncope across Services may reflect differences in the completeness of immunization reporting rather than actual differences in vaccine-associated syncope risk.

Table 1. Syncope by demographic, characteristics, active duty, US Armed Forces, 1998-2002

	Number	Rate*
Total	44,444	6.5
Sex		
Men	29,239	5.0
Women	15,205	15.3
Age		
<20	9,860	16.2
20-24	16,923	7.8
25-29	7,042	5.1
30-34	4,091	3.9
35-39	3,530	3.6
>40	2,998	4.5
Body Mass Index (BMI)		
Underweight (under 18.5)	2,370	10.1
Normal (18.5-24.9)	29,565	7.3
Overweight (25-29.9)	10,957	5.1
Obese (30 and above)	1,553	3.7
Race		
White	31,138	6.3
Black	10,699	7.4
Other	2,607	5.5
Marital status		
Single	24,210	8.4
Married	18,753	5.0
Other	1,481	6.0
Service		
Army	17,027	7.2
Air Force	11,561	6.5
Marines	5,458	6.4
Navy	10,398	5.6
Grade		
Enlisted	40,764	7.1
Officer	3,680	3.4
Occupation		
Combat	6,776	4.9
Healthcare	4,342	7.5
Other	33,326	6.8
Education		
High school or less	35,102	8.5
At least some college	9,342	3.4

* Rate per 1,000 person-years

Finally, syncope that is not cardiac in origin is rarely serious. However, there are potentially life-threatening complications of syncope—most related to head trauma during collapse—that are largely preventable. Current US military guidelines regarding immunizations[9] do not specifically address the protection of recipients from syncope-related injuries. In light of the military's need to conduct mass immunization operations, and given the relative frequency of vaccine-associated syncope, we suggest that vaccine recipients be closely monitored for presyncopal symptoms after vaccinations and that immunization and recovery areas be free of hard (e.g., bare floors), protruding (e.g., desks, tables, chairs, medical equipment), and other potentially harmful surfaces.

Analysis and report by Abigail L. Garvey Wilson, MPH, Analysis Group, Army Medical Surveillance Activity.

References

1. National Institute of Neurological Disorders and Stroke. Syncope information page, http://www.ninds.nih.gov/health_and_medical/disorders/syncope_doc.htm, 8 July, 2003.

2. Gutgesell HP Barst RJ Humes RA Franklin WH Shaddy RE Common cardiovascular problems in the young: Part I. Murmurs, chest pain, syncope and irregular rhythms. Am Fam Physician (1997 Nov 1) 56(7):1825-30.

3. Braun MM, Patriarca PA, Ellenberg SS. Syncope after immunization. Arch Pediatr Adolesc Med 1997 Mar;151(3):255-9.

4. Graham LA, Kenny RA.Clinical characteristics of patients with vasovagal reactions presenting as unexplained syncope. Europace. 2001 Apr;3(2):141-6.

5. Newman BH. Vasovagal reactions in high school students: findings relative to race, risk factor synergism, female sex, and non-high school participants. Transfusion 2002 Dec;42(12):1557-60.

6. Newman BH, Graves S. A study of 178 consecutive vasovagal syncopal reactions from the perspective of safety. Transfusion. 2001 Dec;41(12):1475-9.

7. Driscoll DJ, Jacobsen SJ, Porter CJ, Wollan PC. Syncope in children and adolescents. J Am Coll Cardiol. 1997 Apr;29(5):1039-45.

8. Ammirati F, Colivicchi F, Velardi A, Santini M. Prevalence and correlates of syncope-related traumatic injuries in tilt-induced vasovagal syncope. Ital Heart J. 2001 Jan;2(1):38-41.

9. Secretaries of the Air Force, Army, Navy, and Transportation. Immunizations and chemoprophylaxis. AFJI 48-110, AR 40-562, BUMEDINST 6230,15, CG COMDTINST M6230.4E, 1 November 1995.

Pre- and Post-deployment Health Assessments, US Armed Forces, September 2002-June 2003

In the wake of the cold war and in response to lessons learned during and after the first Gulf War, force health protection, particularly related to deployments, became a strategic priority of the Department of Defense.[1-4] The current deployment force health protection strategy of the US Armed Forces is designed to deploy healthy, fit, and medically well prepared forces (e.g., immunizations, chemoprophylactic drugs, personal protective equipment and measures); minimize illnesses and injuries during deployments; and provide medical and rehabilitative care for medical conditions following deployments.[1]

In 1997, the DoD published instructions regarding deployment-related medical surveillance;[5] in addition, Congress mandated (PL 105-85) the conduct of deployment-related health assessments.[6] In 1998, the DoD standardized the documentation of pre- (DD Form 2795) and post- (DD Form 2796) deployment health assessment processing.[7] In 2001, the DoD included reservists called to active duty for 30 days or more (even if not deployed overseas) in the health assessment process.[8] In 2002, the Joint Staff issued detailed implementing instructions for the conduct of deployment-related health assessments.[9] In 2003, the DoD expanded the post-deployment health assessment questionnaire (DD Form 2796).[10]

Currently, prior to deploying, the health of each servicemember is assessed to ensure his/her medical fitness and readiness for deployment; and at the time of redeployment, the health of each servicemember is again assessed to identify medical conditions and/or exposures of concern—to ensure timely and comprehensive evaluation and treatment. Completed pre- and post-deployment health assessment forms are routinely sent to the Army Medical Surveillance Activity (AMSA) where they are scanned, data entered, and archived in the Defense Medical Surveillance System (DMSS).[11] In the DMSS, data recorded on pre- and post-deployment forms are integrated with data that document demographic and military characteristics and medical experiences (e.g., hospitalizations, ambulatory visits, immunizations) of servicemembers.[11] The continuously expanding integrated DMSS database can be used to monitor the health of servicemembers who participate in various deployments.[11-13]

The overall success of deployment force health protection efforts depends in part on the completeness and quality of pre- and post-deployment health assessments. This report (which will be updated and published monthly in the *MSMR*) summarizes characteristics of servicemembers who completed pre- (since 1 September 2002) and post- (since 1 January 2003) deployment forms, responses to selected questions on pre- and post-deployment forms, and changes in responses of individuals from pre- to post-deployment.

Methods. The DMSS was searched to identify all pre- and post-deployment forms that were completed after 1 September 2002 (to include information related to individuals deployed after 1 October 2002). For summary purposes, pre-deployment responses included all assessments (DD Form 2795) completed after 1 September 2002, and post-deployment responses included all assessments (DD Form 2796) completed after 1 January 2003.

Results. From 1 September 2002 to 30 June 2003, 333,596 pre-deployment health assessment forms were completed at field sites, shipped to AMSA, and entered into the DMSS database—approximately two-thirds (68.7%) of the assessments were completed in January, February, or March (table 1).

From 1 January to 30 June 2003, 52,561 post-deployment health assessments were completed at field sites, shipped to AMSA, and entered into the DMSS database—nearly two-thirds (63.5%) of the assessments were completed in April or May (table 1). Response to selected questions from post-deployment forms (DD2796) completed since 1 January 2003 are summarized in table 3.

The distributions of self-assessments of "overall health status" were very similar among pre- and post-deployment respondents. On both sets of forms, the most frequent responses (in order) were "very good," "excellent," and "good" (figure 1). On post- compared to pre-deployment forms, there were relatively fewer reports of "excellent" overall health

Table 1. Pre-deployment and post-deployment health assessments, by month and year, US Armed Forces, through June 2003

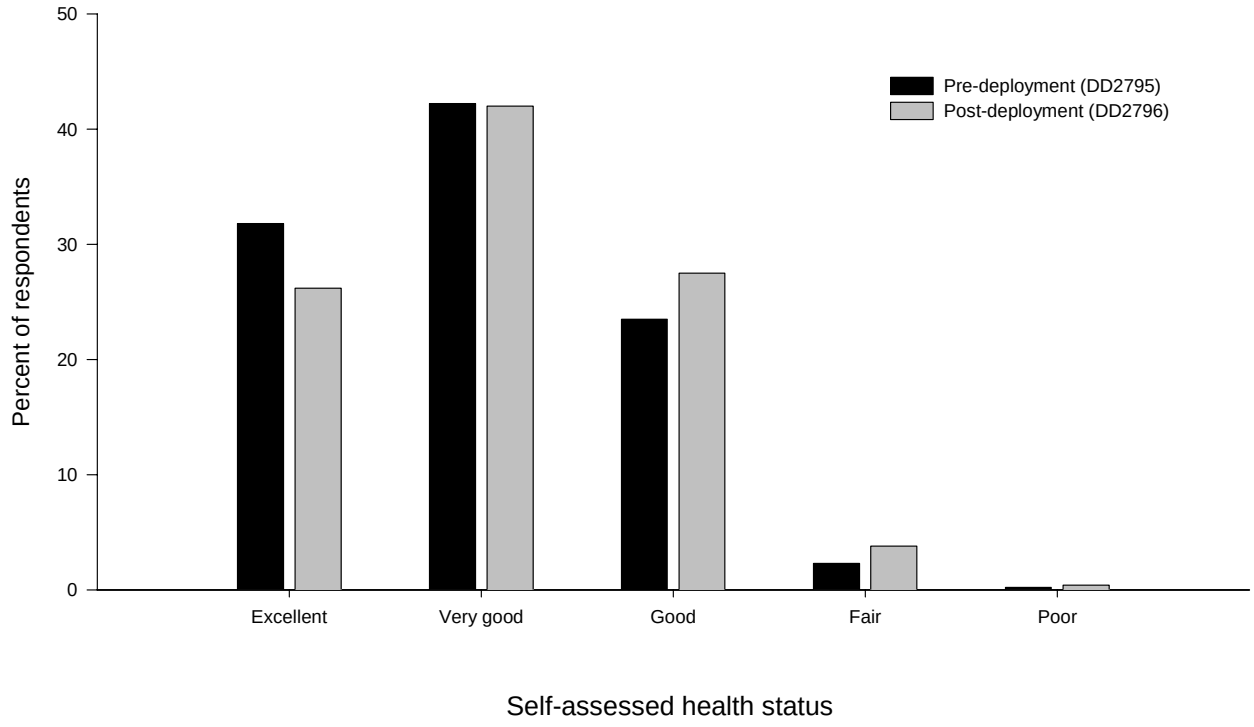
	Pre-deployment *		Post-deployment **	
	No.	%	No.	%
Total	333,596	100.0	52,561	100.0
2002				
September	10,678	3.2	-	-
October	16,166	4.8	-	-
November	17,867	5.4	-	-
December	15,146	4.5	-	-
2003				
January	63,037	18.9	4,909	9.3
February	101,014	30.3	4,203	8.0
March	65,044	19.5	5,388	10.3
April	32,250	9.7	11,508	21.9
May	8,984	2.7	21,875	41.6
June	3,410	1.0	4,678	8.9

* Total pre-deployment assessments (DD Form 2795), 1 September 2002-30 June 2003.

** Total post-deployment assessments (DD Form 2796), 1 January-30 June 2003.

Source: DMSS, 30 June 2003.

Figure 1. Percent distribution of self-assessed overall health status, pre- and post-deployment health forms, US Armed Forces, September 2002-June 2003.



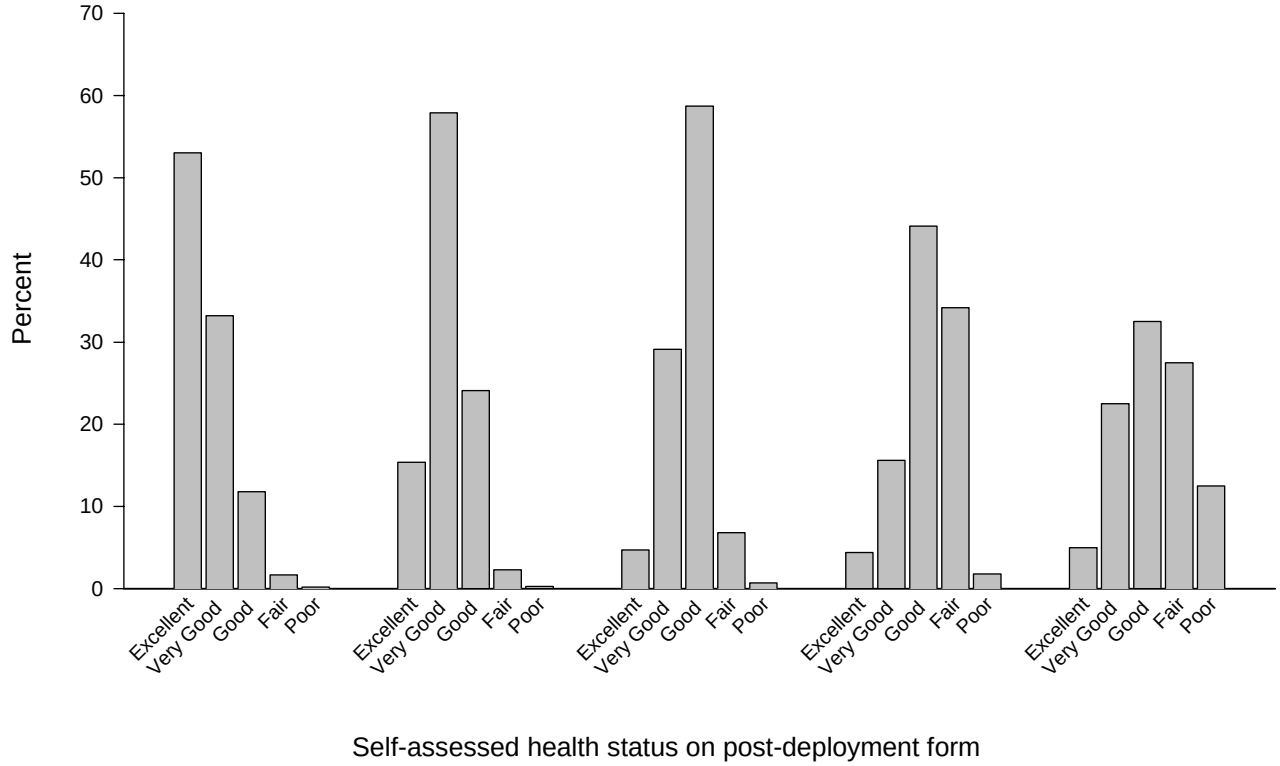
and slightly more of "good" and "fair" (figure 1). Both before and after deploying, fewer than 5% of respondents assessed their overall health as "fair" or "poor" (figure 1).

Among servicemembers (n=31,116) who completed both forms, more than half (55.9%) chose the same descriptor of their "overall health status" before and after deployment (figures 2, 3). Of those (n=13,728) who changed their health status assessments from pre- to post-deployment, most (82.9%) changed by a single category (on a five category scale); and of those who changed by more than one category, approximately 4-times as many indicated a decrement (n=1,932) as an improvement (n=417) in their overall health status (figures 2, 3).

Finally, 9.2% of all servicemembers who completed post-deployment forms reported deployment-related "exposure concerns." The likelihood of reporting an "exposure concern" increased with age (table 2). In general, reservists, members of the Marine Corps and Army, females, officers, and individuals of Hispanic ethnicity were more likely to report "exposure concerns" than their respective counterparts (tables 2, 3).

Editorial comment. In general, servicemembers who have been mobilized/deployed since September 2002 have characterized their overall health statuses as "good" to "excellent." The overall distributions of self-assessed health statuses were very similar prior to and after deploying. More servicemembers (but still relatively few) reported declines than improvements in their overall health statuses from pre- to post- deployment. This is not surprising considering the extreme physical and psychological stresses associated with mobilization, overseas deployment, and participation in combat operations.[14] The deployment health assessment process is specifically designed to identify, assess, and follow-up as necessary all servicemembers with concerns

Figure 2. Self-assessed health status on post-deployment form, in relation to self-assessed health status predeployment, US Armed Forces, September 2002-June 2003.



regarding their health and/or deployment-related exposures.

Overall, approximately one of every 11 servicemembers who completed post-deployment health assessments reported an "exposure concern." Of demographic factors, the strongest correlate of reporting an exposure concern was older age. The higher crude prevalences of exposure concerns among reservists (versus active component) and officers (versus enlisted), for example, are likely explained at least in part by differences in the age distributions of the respective groups. Trends in the numbers and natures of deployment-related "exposure concerns" will be closely monitored as more servicemembers return from overseas and/or demobilize.

References

1. Medical readiness division, J-4, JCS. Capstone document: force health protection. Washington, DC. Available at: < http://www.dtic.mil/jcs/j4/organization/hssd/fhpcapstone.pdf >.

2. Brundage JF. Military preventive medicine and medical surveillance in the post-cold war era. Mil Med. 1998 May;163(5):272-7.

3. Trump DH, Mazzuchi JF, Riddle J, Hyams KC, Balough B. Force health protection: 10 years of lessons learned by the Department of Defense. Mil Med. 2002 Mar;167(3):179-85.

4. Hyams KC, Riddle J, Trump DH, Wallace MR. Protecting the health of United States military forces in Afghanistan: applying lessons learned since the Gulf War. Clin Infect Dis. 2002 Jun 15;34(Suppl 5):S208-14.

5. DoD instruction 6490.3, subject: Implementation and application of joint medical surveillance for deployments. 7 Aug 1997.

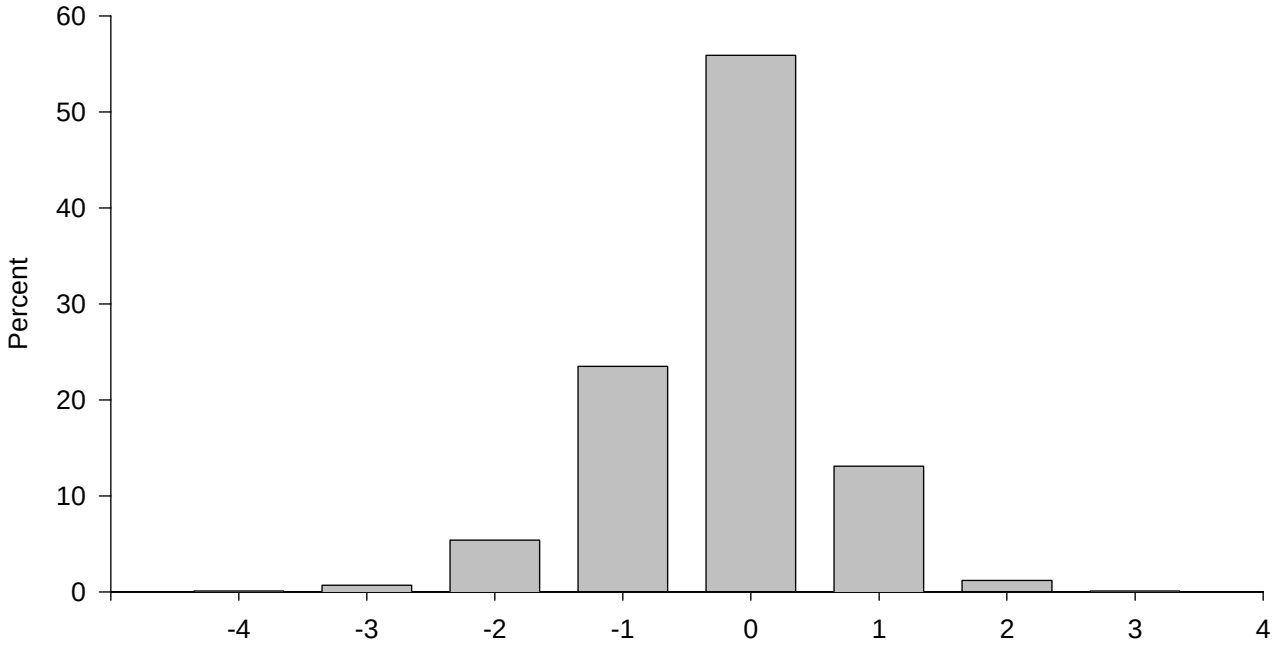
6. 10 USC 1074f, subject: Medical tracking system for members deployed overseas. 18 Nov 1997.

7. ASD (Health Affairs) memorandum, subject: Policy for pre- and post-deployment health assessments and blood samples (HA policy: 99-002). 6 Oct 1998.

8. ASD (Health Affairs) memorandum, subject: Updated policy for pre- and post-deployment health assessments and blood samples (HA policy: 01-017). 25 Oct 2001.

9. JCS memorandum, subject: Updated procedures for deployment health surveillance and readiness (MCM-0006-02). 1 Feb 2002.

Figure 3. Distribution of self-assessed health status changes from pre- to post-deployment form, US Armed Forces, September 2002-June 2003.



Change in self-assessment of overall health status, pre- to post-deployment, was calculated as: post deployment response - pre-deployment response, using the following scale: 1= "poor"; 2="fair"; 3="good"; 4="very good"; and 5="excellent."

10. USD (Personnel and Readiness) memorandum, subject: Enhanced post-deployment health assessments. 22 Apr 2003.
11. Rubertone MV, Brundage JF. The Defense Medical Surveillance System and the Department of Defense Serum Repository: glimpses of the future of comprehensive public health surveillance. *Am J Pub Hlth* 2002 Dec;92(12):1900-4.
12. Brundage JF, Kohlhase KF, Gambel JM. Hospitalization experiences of U.S. servicemembers before, during, and after participation in peacekeeping operations in Bosnia-Herzegovina. *Am J Ind Med* 2002 Apr;41(4):279-84.
13. Brundage JF, Kohlhase KF, Rubertone MV. Hospitalizations for all causes of U.S. military service members in relation to participation in Operations Joint Endeavor and Joint Guard, Bosnia-Herzegovina, January 1995 to December 1997. *Mil Med* 2000 Jul;165(7):505-11.
14. Hyams KC, Wignall FS, Roswell R. War syndromes and their evaluation: from the U.S. Civil War to the Persian Gulf War. Ann Intern Med. 1996 Sep 1;125(5):398-405.

Table 2. Reponses to selected questions from post-deployment forms (DD2796) submitted since 1 January 2003, by service and component, US Armed Forces

	Army	Navy	Air Force	Marines	Total
Active duty					
SMs with DD 2796 at AMSA	8,507	1,062	12,230	3,200	24,999
DD 2796 enhanced version*	99%	71%	98%	86%	98%
General health ("fair" or "poor")	6%	3%	1%	3%	3%
Medical/dental problems	17%	12%	6%	12%	11%
Currently on Profile	14%	2%	1%	3%	6%
Mental health concerns	3%	1%	1%	1%	1%
Exposure concerns	9%	6%	3%	6%	5%
Health concerns	10%	8%	3%	12%	7%
Referral indicated	28%	20%	15%	9%	16%
Med. visit following referral**	65%	57%	58%	35%	60%
Post deployment serum*	91%	0%	14%	3%	80%
Reserve component					
SMs with DD 2796 at AMSA	15,012	1,466	4,461	528	21,467
DD 2796 Enhanced version*	98%	100%	100%	91%	98%
General health ("fair" or "poor")	5%	3%	2%	5%	4%
Medical/dental problems	20%	26%	12%	20%	18%
Currently on profile	11%	3%	2%	6%	8%
Mental health concerns	2%	1%	1%	2%	2%
Exposure concerns	12%	14%	6%	17%	11%
Health concerns	11%	7%	7%	53%	11%
Referral indicated	19%	15%	15%	15%	15%
Med. visit following referral**	23%	72%	11%	58%	25%
Post deployment serum*	65%	6%	11%	8%	56%

* Only calculated for DD 2796 completed since 01JUN2003.

** Inpatient or outpatient visit within 6 months after referral.

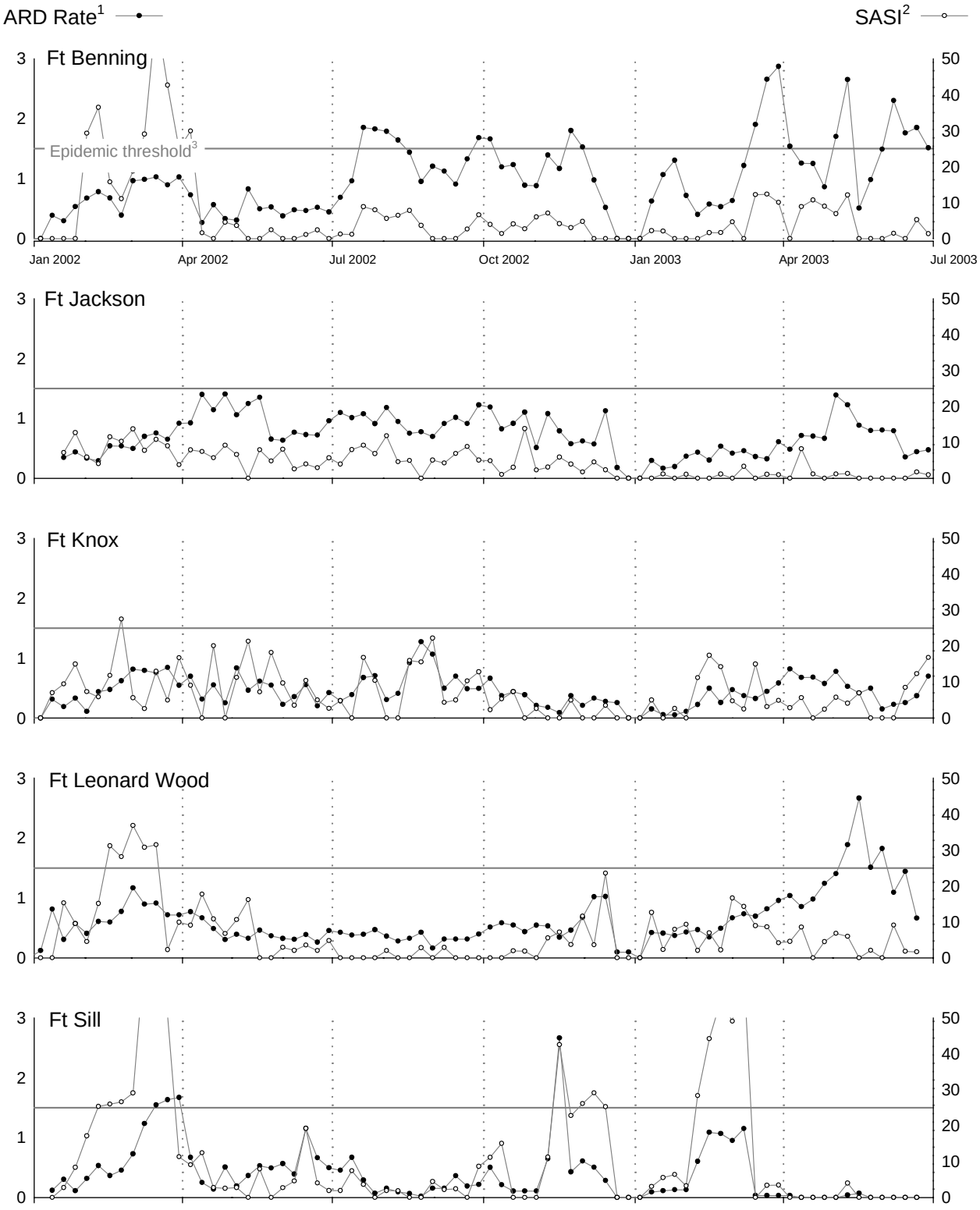
Table 3. Deployment-related "exposure concerns" reported on post-deployment health assessments*, US Armed Forces, January-June 2003

	Total respondents	Exposure concerns (no.)	Exposure concerns (%)	Relative % with exposure concerns
Total	46,985	4,319	9.2	-
Component				
Active	25,768	1,898	7.4	1.0
Reserve	21,216	2,421	11.4	1.5
Service				
Army	23,211	2,593	11.2	1.0
Navy	2,534	200	7.9	0.7
Air Force	17,429	820	4.7	0.4
Marine Corps	3,811	706	18.5	1.7
Age (years)				
<20	1,404	61	4.3	1.0
20-29	21,672	1,651	7.6	1.8
30-39	14,712	1,498	10.2	2.3
>39	9,197	1,109	12.1	2.8
Gender				
Male	41,280	3,714	9.0	1.0
Female	5,705	605	10.6	1.2
Race/ethnicity				
Black non-hispanic	7,361	741	10.1	1.0
Hispanic	1,667	230	13.8	1.4
Other	2,203	224	10.2	1.0
White non-hispanic	35,313	3,099	8.8	0.9
Grade				
Enlisted	39,169	3,375	8.6	1.0
Officer	7,816	944	12.1	1.4

* Post-deployment health assessments (DD Form 2796) with completion dates: 1January-30 June 2003.

Source: DMSS, 30 June 2003.

Acute respiratory disease (ARD) and streptococcal pharyngitis (SASI), Army Basic Training Centers, by week through June 28, 2003



[1]ARD rate = cases per 100 trainees per week

[2]SASI (Strep ARD surveillance index) = (ARD rate)x(rate of Group A beta-hemolytic strep)

[3]ARD rate >=1.5 or SASI >=25.0 for 2 consecutive weeks indicates an "epidemic"

Sentinel reportable events for all beneficiaries[1] at US Army medical facilities, cumulative numbers[2] for calendar years through June 30, 2002 and 2003

Reporting location	Number of reports all events[3]		Food-borne								Vaccine Preventable					
			Campylo-bacter		Giardia		Salmonella		Shigella		Hepatitis A		Hepatitis B		Varicella	
	2002	2003	2002	2003	2002	2003	2002	2003	2002	2003	2002	2003	2002	2003	2002	2003
NORTH ATLANTIC																
Washington, DC Area	144	146	3	.	1	4	2	2	7	3	.	.	.	.	.	2
Aberdeen, MD	30	43	.	.	.	.	.	.	1	.	.	.	1	.	.	.
FT Belvoir, VA	113	105	6	2	3	.	7	5	.	3	.	.	.	.	.	.
FT Bragg, NC	1,129	978	6	4	.	.	7	4	5	15	.	.	1	.	.	2
FT Drum, NY	39	104	.	.	.	.	.	.	.	.	.	.	.	.	.	1
FT Eustis, VA	126	129	1	.	.	.	1	1	5	.	.	.	1	.	1	2
FT Knox, KY	127	126	1	1	1	.	4	3	.	.	.	.	.	.	.	.
FT Lee, VA	130	91	.	.	.	.	.	.	.	.	.	.	.	.	.	.
FT Meade, MD	50	51	.	.	.	.	.	.	.	.	.	.	.	.	1	.
West Point, NY	20	26	.	2	.	.	1	1	.	.	.	1	.	1	.	.
GREAT PLAINS																
FT Sam Houston, TX	156	129	.	.	.	.	2	4	.	.	.	.	.	.	.	.
FT Bliss, TX	108	161	.	1	1	3	4	2	2	1	.	.	2	.	.	1
FT Carson, CO	341	277	2	1	2	2	.	2	.	.	.	3	2	.	.	1
FT Hood, TX	1,137	849	.	4	.	.	4	13	1	62	.	.	.	.	.	.
FT Huachuca, AZ	26	36	.	.	.	.	.	.	.	.	.	.	.	.	.	.
FT Leavenworth, KS	22	27	.	1	.	.	.	1	.	.	1	.	.	.	.	.
FT Leonard Wood, MO	124	125	.	1	.	.	1	.	.	.	.	.	.	1	2	3
FT Polk, LA	90	119	.	.	.	.	.	.	.	.	.	.	.	.	.	.
FT Riley, KS	165	114	.	2	.	1	.	.	.	.	.	.	.	2	1	.
FT Sill, OK	138	118	1	.	.	.	.	.	3	.	.	.	.	.	.	.
SOUTHEAST																
FT Gordon, GA	95	143	.	.	.	1	.	1	1	.	1	.	1	1	.	.
FT Benning, GA	244	237	.	.	3	1	8	4	.	4	.	.	.	.	.	.
FT Campbell, KY	412	263	2	3	.	1	2	3	.	.	.	.	.	.	1	.
FT Jackson, SC	129	60	.	.	.	.	.	.	.	.	.	1	.	.	1	.
FT Rucker, AL	48	29	1	.	.	.	.	1	.	.	.	1	.	.	.	.
FT Stewart, GA	338	172	.	.	1	.	5	4	2	2	.	.	.	.	1	.
WESTERN																
FT Lewis, WA	425	271	1	1	.	4	5	4	.	2	.	.	.	.	.	.
FT Irwin, CA	30	28	.	.	.	.	.	.	.	.	.	.	.	.	.	.
FT Wainwright, AK	56	65	1	.	1	.	.	.	.	.	.	.	.	.	.	.
OTHER LOCATIONS																
Hawaii	438	519	25	12	8	4	7	6	.	3	.	.	2	.	.	.
Europe	1,002	700	16	10	.	.	18	10	.	.	.	4	5	.	5	.
Korea	218	338	1	.	.	.	1	.	.	.	.	1	1	.	1	1
Total	**7,650**	**6,579**	**67**	**45**	**21**	**21**	**79**	**71**	**27**	**95**	**2**	**11**	**16**	**5**	**14**	**13**

1. Includes active duty servicemembers, dependents, and retirees.

2. Events reported by July 7, 2002 and 2003.

3. Seventy events specified by Tri-Service Reportable Events, Version 1.0, July 2000.

Note: Completeness and timeliness of reporting vary by facility.

Source: Army Reportable Medical Events System.

(Cont'd) Sentinel reportable events for all beneficiaries[1] at US Army medical facilities, cumulative numbers[2] for calendar years through June 30, 2002 and 2003

Reporting location	Arthropod-borne				Sexually Transmitted								Environmental			
	Lyme Disease		Malaria		Chlamydia		Gonorrhea		Syphilis[3]		Urethritis[4]		Cold		Heat	
	2002	2003	2002	2003	2002	2003	2002	2003	2002	2003	2002	2003	2002	2003	2002	2003
NORTH ATLANTIC																
Washington, DC Area	2	.	2	.	52	95	11	10	3	2	.	.	.	1	2	.
Aberdeen, MD	.	.	.	.	27	24	1	10	.	.	.	.	.	9	.	.
FT Belvoir, VA	2	.	.	.	71	78	21	17	1	.	.	.	.	.	.	.
FT Bragg, NC	.	1	1	4	816	691	140	153	1	4	78	60	.	4	64	35
FT Drum, NY	.	.	.	.	25	72	14	16	.	.	.	.	.	4	.	.
FT Eustis, VA	1	.	.	.	96	102	19	22	.	1	.	.	.	.	1	.
FT Knox, KY	.	.	.	.	98	109	19	12	.	.	.	.	.	.	2	.
FT Lee, VA	.	.	.	.	108	72	22	19	.	.	.	.	.	.	.	.
FT Meade, MD	1	.	.	.	42	43	4	8	.	.	2	.	.	.	.	.
West Point, NY	7	6	.	.	5	10	3	1	.	.	.	.	.	.	3	4
GREAT PLAINS																
FT Sam Houston, TX	.	.	.	.	115	98	17	25	.	1	.	.	.	.	1	.
FT Bliss, TX	.	.	.	.	49	115	6	24	1	2	.	.	.	.	.	1
FT Carson, CO	.	.	.	.	226	197	29	26	.	.	32	32	1	2	.	1
FT Hood, TX	.	.	1	.	618	450	235	144	2	1	167	110	.	5	15	8
FT Huachuca, AZ	.	.	.	.	20	34	5	2	.	.	.	.	.	.	1	.
FT Leavenworth, KS	.	.	.	.	15	21	6	2	.	.	.	.	.	.	.	.
FT Leonard Wood, MO	.	.	1	.	90	105	20	8	.	.	2	1	.	2	3	1
FT Polk, LA	.	.	.	.	56	88	28	31	3	.	.	.	.	.	.	.
FT Riley, KS	.	.	.	.	119	102	33	5	.	.	.	.	11	.	.	.
FT Sill, OK	.	.	.	.	88	74	21	15	.	1	22	21	.	.	3	.
SOUTHEAST																
FT Gordon, GA	.	.	.	1	77	118	12	11	.	5	.	.	.	.	.	.
FT Benning, GA	.	.	.	19	126	130	68	57	1	.	.	.	.	.	34	21
FT Campbell, KY	.	1	.	.	328	188	70	54	1	1	.	.	1	2	3	2
FT Jackson, SC	.	.	.	.	102	46	24	7	1	.	.	.	1	4	.	.
FT Rucker, AL	.	.	.	.	36	16	11	5	.	.	.	1	.	.	.	4
FT Stewart, GA	2	.	.	.	211	74	87	38	1	.	.	35	.	.	25	11
WESTERN																
FT Lewis, WA	.	.	1	1	309	151	42	44	2	.	61	53	.	.	.	.
FT Irwin, CA	.	.	.	.	21	22	9	5	.	.	.	.	.	.	.	.
FT Wainwright, AK	1	.	.	1	35	39	3	5	.	.	.	.	13	15	.	.
OTHER LOCATIONS																
Hawaii	.	.	2	.	295	344	49	58	.	.	.	.	.	.	1	7
Europe	2	1	3	2	718	523	213	124	3	2	3	1	4	3	4	1
Korea	.	.	1	2	162	275	46	42	.	2	1	4	3	3	.	1
Total	**18**	**9**	**12**	**30**	**5,156**	**4,506**	**1,288**	**1,000**	**20**	**22**	**368**	**318**	**34**	**54**	**162**	**97**

3. Primary and secondary.

4. Urethritis, non-gonococcal (NGU).

Note: Completeness and timeliness of reporting vary by facility.

Source: Army Reportable Medical Events System.

Table 1. Sentinel reportable events among all beneficiaries[1] at US Army medical facilities, cumulative numbers[2], calendar years 2001 and 2002

Reporting location	Number of reports all events[3]		Food-borne								Vaccine Preventable					
			Campylo-bacter		Giardia		Salmonella		Shigella		Hepatitis A		Hepatitis B		Varicella	
	2001	2002	2001	2002	2001	2002	2001	2002	2001	2002	2001	2002	2001	2002	2001	2002
NORTH ATLANTIC																
Washington, DC Area	198	239	1	6	8	6	8	7	3	7	.	2	.	1	2	1
Aberdeen, MD	63	57	.	1	.	1	.	.	.	1	.	.	1	1	.	.
FT Belvoir, VA	206	230	11	9	11	5	10	8	.	3	1	.	.	.	.	.
FT Bragg, NC	1,736	2,270	6	11	.	.	36	46	1	62	.	.	6	1	3	.
FT Drum, NY	199	170	2	1	3	.	2	.	.	.	.	.	.	.	.	.
FT Eustis, VA	276	287	1	3	.	.	2	3	.	9	.	.	.	1	1	2
FT Knox, KY	278	236	1	5	5	4	2	5	.	.	.	.	.	.	1	.
FT Lee, VA	226	233	.	.	.	.	.	1	.	.	.	.	.	.	.	.
FT Meade, MD	70	122	.	.	.	1	1	1	.	.	.	.	.	.	.	1
West Point, NY	87	118	1	.	.	.	1	3	.	.	3	2	.	1	.	2
GREAT PLAINS																
FT Sam Houston, TX	399	337	.	.	2	.	4	3	1	.	.	.	.	.	.	.
FT Bliss, TX	282	262	3	.	7	5	1	5	6	2	.	.	2	2	1	.
FT Carson, CO	722	652	3	8	8	8	5	4	2	4	.	.	2	3	.	.
FT Hood, TX	2,282	2,547	4	6	2	.	16	17	16	12	.	.	10	.	2	.
FT Huachuca, AZ	47	70	1	.	.	.	1	1	1	.	.	.	.	.	1	.
FT Leavenworth, KS	43	55	1	.	.	3	2	.	.	1	.	1	.	.	.	.
FT Leonard Wood, MO	233	248	1	.	.	.	.	3	.	.	1	.	.	.	6	4
FT Polk, LA	257	237	.	.	.	.	3	6	.	1	.	.	.	.	.	.
FT Riley, KS	268	301	.	.	1	.	2	1	.	.	.	1	1	1	.	1
FT Sill, OK	443	357	.	1	.	.	1	.	7	5	.	.	1	.	2	.
SOUTHEAST																
FT Gordon, GA	282	261	.	.	.	.	2	.	.	3	3	1	2	2	.	.
FT Benning, GA	522	562	1	.	3	3	6	31	12	2	.	.	.	.	5	3
FT Campbell, KY	911	768	6	4	6	2	7	4	1	2	1	.	.	.	.	3
FT Jackson, SC	294	267	.	.	.	.	.	.	.	.	1	.	5	1	2	1
FT Rucker, AL	91	84	.	1	.	.	4	3	.	2	.	.	.	.	.	.
FT Stewart, GA	492	591	.	1	.	4	17	12	.	3	.	.	3	.	.	1
WESTERN																
FT Lewis, WA	754	793	5	3	3	2	9	6	1	1	.	.	2	.	.	.
FT Irwin, CA	86	70	.	.	.	.	.	.	.	.	2	.	3	1	2	.
FT Wainwright, AK	190	161	.	1	3	1	.	1	.	.	.	.	.	.	.	.
OTHER LOCATIONS																
Hawaii	969	967	42	43	14	12	27	14	7	1	1	.	1	10	.	.
Europe	1,928	2,273	42	35	5	.	57	46	1	3	3	1	13	9	9	5
Korea	131	676	.	3	.	.	5	8	.	.	1	1	.	1	2	1
Total	**14,965**	**16,501**	**132**	**142**	**81**	**57**	**231**	**239**	**59**	**124**	**17**	**9**	**52**	**35**	**39**	**25**

1. Includes active duty servicemembers, dependents, and retirees.

2. Events reported by April 7, 2003.

3. Seventy events specified by Tri-Service Reportable Events, Version 1.0, July 2000.

Note: Completeness and timeliness of reporting vary by facility.

Source: Army Reportable Medical Events System.

Corrected table: The table on this and the following page is the corrected version of the table that appeared in the April 2003 issue of the MSMR.
The correct table is posted on the AMSA website.

Table 1. (Cont'd) Sentinel reportable events among all beneficiaries[1] at US Army medical facilities, cumulative numbers[2], calendar years 2001 and 2002

Reporting location	Arthropod-borne				Sexually Transmitted								Environmental			
	Lyme Disease		Malaria		Chlamydia		Gonorrhea		Syphilis[3]		Urethritis[4]		Cold		Heat	
	2001	2002	2001	2002	2001	2002	2001	2002	2001	2002	2001	2002	2001	2002	2001	2002
NORTH ATLANTIC																
Washington, DC Area	3	5	1	2	89	100	24	23	10	6	.	.	.	.	.	2
Aberdeen, MD	.	2	.	.	42	48	12	3	.	.	2	.	3	.	.	.
FT Belvoir, VA	.	3	.	.	130	157	30	34	2	1	.	.	.	.	3	2
FT Bragg, NC	.	.	15	5	866	1,589	353	302	.	1	238	128	7	1	194	110
FT Drum, NY	.	.	.	2	146	113	40	29	1	.	.	.	2	11	.	14
FT Eustis, VA	.	1	.	.	187	212	72	51	.	1	.	.	.	.	10	3
FT Knox, KY	.	.	1	.	215	167	47	48	2	.	.	.	.	.	2	3
FT Lee, VA	.	2	.	.	173	192	53	36	.	.	.	.	.	.	.	2
FT Meade, MD	.	5	.	.	53	96	14	15	1	.	1	2	.	.	.	.
West Point, NY	50	42	.	.	26	20	3	9	.	1	1	.	.	.	1	37
GREAT PLAINS																
FT Sam Houston, TX	.	.	1	.	325	259	48	48	.	1	3	.	1	.	8	2
FT Bliss, TX	1	.	4	.	153	163	55	28	1	1	.	.	.	.	5	1
FT Carson, CO	.	.	.	3	545	454	66	54	1	1	85	64	.	1	.	.
FT Hood, TX	1	.	4	5	1,307	1,396	445	491	5	4	390	445	.	2	62	40
FT Huachuca, AZ	.	.	.	.	37	57	5	10	.	.	.	.	.	.	.	2
FT Leavenworth, KS	.	.	.	1	28	36	9	11	.	.	.	.	.	.	.	.
FT Leonard Wood, MO	.	.	.	1	146	175	41	40	.	.	8	2	9	3	15	12
FT Polk, LA	.	.	1	1	195	156	52	63	.	3	.	.	.	.	2	1
FT Riley, KS	.	.	1	2	184	226	46	52	.	.	.	.	5	12	27	3
FT Sill, OK	1	.	1	2	238	201	103	67	.	.	71	59	1	1	12	19
SOUTHEAST																
FT Gordon, GA	.	2	10	1	227	205	27	32	.	1	.	.	.	.	2	1
FT Benning, GA	2	.	1	1	312	286	99	135	.	1	1	.	.	.	45	94
FT Campbell, KY	2	1	1	3	716	544	157	168	1	1	.	.	.	1	8	24
FT Jackson, SC	.	.	.	.	192	216	60	42	3	1	.	.	.	4	27	2
FT Rucker, AL	.	.	.	1	65	53	15	19	.	.	.	.	.	.	4	5
FT Stewart, GA	.	3	1	1	178	358	140	150	1	2	138	11	.	.	11	42
WESTERN																
FT Lewis, WA	.	.	.	3	508	561	92	86	1	2	121	112	4	.	.	.
FT Irwin, CA	.	.	.	.	50	53	14	12	.	.	.	.	.	.	13	2
FT Wainwright, AK	.	1	.	.	131	123	5	8	.	.	.	.	46	19	.	.
OTHER LOCATIONS																
Hawaii	.	.	.	3	689	666	85	106	1	1	1	.	1	.	7	19
Europe	7	11	7	11	1,478	1,652	247	458	2	6	2	3	17	14	5	8
Korea	.	.	12	20	63	476	36	124	1	1	1	1	1	18	4	14
Total	**67**	**78**	**61**	**68**	**9,694**	**11,010**	**2,495**	**2,754**	**33**	**36**	**1,063**	**827**	**97**	**87**	**467**	**464**

3. Primary and secondary.

4. Urethritis, non-gonococcal (NGU).

Note: Completeness and timeliness of reporting vary by facility.

Source: Army Reportable Medical Events System.

Commander
U.S. Army Center for Health Promotion
and Preventive Medicine
ATTN: MCHB-TS-EDM
5158 Blackhawk Road
Aberdeen Proving Ground, MD 21010-5403

OFFICIAL BUSINESS

STANDARD
U.S. POSTAGE
PAID
APG, MD
PERMIT NO. 1

The Medical Surveillance Monthly Report (MSMR) is prepared by the Army Medical Surveillance Activity , Directorate of Epidemiology and Disease Surveillance, US Army Center for Health Promotion and Preventive Medicine (USACHPPM).

Data in the MSMR are provisional, based on reports and other sources of data available to AMSA.

Inquiries regarding content or material to be considered for publication should be directed to: Editor, Army Medical Surveillance Activity, Building T-20, Room 213 (Attn: MCHB-TS-EDM), 6900 Georgia Avenue, NW, Washington, D.C. 20307-5001. E-mail: editor@amsa.army.mil